

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application. Additions are shown by underlining and deletions are shown as ~~struck-through~~.

1. (Withdrawn) A star, dendrimer or hyper-branched flowable prepolymer composition comprising the reaction product of isocyanate and low molecular weight multifunctional core molecules having at least two and preferably three or more functional groups that react with said isocyanate to form urethane or urea groups.
2. (Withdrawn) A prepolymer composition as claimed in claim 1, wherein said low molecular weight multifunctional core molecule is selected from the group consisting of diols, triols, and polyols such as sugar molecules.
3. (Withdrawn) A prepolymer composition as claimed in claim 1, wherein said low molecular weight multifunctional core molecule has a molecular weight of 400 or less.
4. (Withdrawn) A prepolymer composition as claimed in claim 1, wherein said isocyanate is optionally substituted aliphatic, aromatic and hindered isocyanate.
5. (Withdrawn) A prepolymer composition as claimed in claim 1, wherein said isocyanate is aliphatic and asymmetric in molecular shape.
6. (Withdrawn) A prepolymer composition as claimed in claim 1, wherein the viscosity of the prepolymer composition on preparation is about 15,000-200,000 cSt at room temperature.
7. (Withdrawn) A prepolymer composition as claimed in claim 1, further comprising biological and inorganic components selected from the group consisting of cells, progenitor cells, growth factors, other components for supporting cell growth, calcium phosphate, hydroxyapatite, adhesives including fibrin, collagen and transglutaminase systems, surfactants including siloxane surfactants, porogens including silica particles, powdered silica, sugars and sodium chloride type salts, polymeric hollow fibres and gelatin beads.

8. (Withdrawn) A prepolymer composition as claimed in claim 1, comprising the reaction product of pentaerythritol and methyl 2,6-diisocyanato hexanoate.
9. (Withdrawn) A prepolymer composition as claimed in claim 1, comprising the reaction product of glucose and methyl 2,6-diisocyanato hexanoate.
10. (Withdrawn) A prepolymer composition as claimed in claim 1, comprising the reaction product of glucose and ethyl 2,6-diisocyanato hexanoate.
11. (Currently Amended) A biodegradable biocompatible polyurethane/urea polymer composition comprising the reaction product of a flowable prepolymer of claim 1, and linear star dendrimer or hyperbranched soft segment forming functional oligomers with degradable arms, wherein the prepolymer comprises the reaction product of an isocyanate and a low molecular weight multifunctional core molecule having at least two functional groups that react with said isocyanate to form urethane or urea groups.
12. (Original) A biodegradable biocompatible polyurethane/urea polymer composition as claimed in claim 11, wherein said linear star dendrimer or hyperbranched soft segment forming functional oligomer with degradable arms is selected from the group consisting of lactides, glycolides, lactide/glycolides, caprolactones, propylene fumarates, glycolic acid, dioxanones, anhydrides, polyorthoesters and phosphorylcholines.
13. (Previously Presented) A biodegradable biocompatible polyurethane/urea polymer composition as claimed in claim 11, wherein said linear star dendrimer or hyperbranched soft segment forming functional oligomer with degradable arms is zwitterionic.
14. (Previously Presented) A biodegradable biocompatible polyurethane/urea polymer composition as claimed in claim 11, comprising the reaction product of water, polycaprolactone triol and a prepolymer comprising the reaction product of pentaerythritol and methyl 2,6-diisocyanato hexanoate.

15. (Previously Presented) A biodegradable biocompatible polyurethane/urea polymer composition as claimed in claim 11, comprising the reaction product of water, polycaprolactone triol and a prepolymer comprising the reaction product of glucose and methyl 2,6-diisocyanato hexanoate.
16. (Previously Presented) A biodegradable biocompatible polyurethane/urea polymer composition as claimed in claim 11, comprising the reaction product of water and polycaprolactone triol and a prepolymer comprising the reaction product of glucose and ethyl 2,6-diisocyanato hexanoate.
17. (Previously Presented) A biodegradable biocompatible polyurethane/urea polymer composition as claimed in claim 11, comprising the reaction product of polycaprolactone triol and dihydroxypolycaprolactone phosphoryl choline and a prepolymer comprising the reaction product of pentaerythritol and methyl 2,6-diisocyanato hexanoate.
18. (Previously Presented) A biodegradable biocompatible polyurethane/urea polymer composition as claimed in claim 11, comprising the reaction product of polycaprolactone triol and a 1,2-dihydroxy-N,N-dimethylaminopropane sulfonate zwitterion and a prepolymer comprising the reaction product of glucose and methyl 2,6-diisocyanato hexanoate.
19. (Previously Presented) A biodegradable, biocompatible polymeric scaffold comprising a cured biocompatible, biodegradable polyurethane/urea composition as claimed in claim 14.
20. (Original) A biodegradable, biocompatible polymeric scaffold as claimed in claim 19 having a compressive strength in the range of 0.05–80 MPa.
21. (Previously Presented) A biodegradable, biocompatible polymeric scaffold as claimed in claim 19, having pores in a size range of 150–300 micron.
22. (Currently Amended) A biodegradable, biocompatible polymeric scaffold as

claimed in claim 14, further comprising biological components selected from the group consisting of cells, progenitor cells, growth factors, ~~other~~ components for supporting cell growth, calcium phosphate, hydroxyapatite, adhesives, ~~including~~ fibrin, collagen, and transglutaminase systems, surfactants, ~~including~~ siloxane surfactants, porogens, ~~including~~ silica particles, powdered silica, sugars, sodium chloride type salts, polymeric hollow ~~fibres-fibers~~, and gelatin beads.

23. (Withdrawn) A process for the preparation of a biocompatible, biodegradable polyurethane/urea composition as claimed in claim 11, comprising

reacting an isocyanate with a core molecule having at least two and preferably three or more functional groups that react with said isocyanate to form urethane or urea groups under suitable conditions to form a prepolymer composition with a flowable viscosity; and

reacting said prepolymer with a star soft segment forming functional oligomer with degradable arms and optionally, appropriate amounts of water and catalyst under conditions such that the reaction temperature does not exceed 90°C.

24. (Withdrawn) A process as claimed in claimed in claim 23 wherein the functional oligomer is soluble in said prepolymer.

25. (Withdrawn) A process as claimed in claim 23, further comprising the step of reacting said prepolymer with high molecular weight degradable polymer selected from the group consisting of PLGA, PLLA and poly(anhydrides).

26. (Currently Amended) A biodegradable, biocompatible polyurethane/urea scaffold prepared by

reacting an isocyanate with a core molecule having at least two ~~and preferably~~ ~~three or more~~ functional groups that react with said isocyanate to form urethane or urea groups under suitable conditions to form a flowable prepolymer; and

reacting said prepolymer with a star soft segment forming functional oligomers with degradable arms and optionally, ~~appropriate amounts of~~ water and catalyst, under conditions such that the reaction temperature does not exceed 90°C.

27. (Withdrawn) A method of treatment of damaged bone or cartilage in a patient requiring such treatment, the method comprising administering to said patient a biocompatible, biodegradable polyurethane/urea composition as claimed in claim 11, said administration occurring by the implant of a scaffold formed ex-vivo from a cured form of said polyurethane/urea composition, or by the injection of said polymer in an uncured form for *in-vivo* curing and scaffold formation.
28. (Withdrawn) A process of repairing bone and/or cartilage comprising integrating said scaffold formed from said biocompatible, biodegradable polyurethane/urea composition as claimed in claim 11 with bone and/or cartilage.
29. (Withdrawn) The process for the preparation of a biocompatible, biodegradable polyurethane/urea composition as claimed in claim 23, wherein the reaction temperature does not exceed 60°C.
30. (Withdrawn) The process for the preparation of a biocompatible, biodegradable polyurethane/urea composition as claimed in claim 29, wherein the reaction temperature does not exceed 40°C.
31. (Previously Presented) The biodegradable, biocompatible polyurethane/urea scaffold as claimed in claim 26, wherein the reaction temperature does not exceed 60°C.
32. (Previously Presented) The biodegradable, biocompatible polyurethane/urea scaffold as claimed in claim 31, wherein the reaction temperature does not exceed 40°C.
33. (New) A biodegradable, biocompatible polyurethane/urea polymer composition as claimed in claim 11, wherein the isocyanate used in formation of said prepolymer is 1,6-hexamediisocyanate.
34. (New) A biodegradable, biocompatible polyurethane/urea polymer composition as claimed in claim 11, wherein the isocyanate used in formation of said prepolymer is isophorone diisocyanate.

35. (New) A biodegradable biocompatible polyurethane/urea polymer composition as claimed in claim 11, wherein the prepolymer composition is the reaction product of pentaerythritol and ethyl-2,6-diisocyanate hexanoate.
36. (New) A biodegradable, biocompatible polyurethane/urea polymer composition as claimed in claim 11, wherein the prepolymer composition is the reaction product of trimethylol propane and ethyl-2,6-diisocyanate hexanoate.
37. (New) A biodegradable, biocompatible polyurethane/urea polymer composition as claimed in claim 11, wherein the linear star dendrimer or hyperbranched soft segment forming functional oligomer with degradable arms is polycaprolactone triol.
38. (New) A biodegradable biocompatible polyurethane/urea polymer composition as claimed in claim 11, wherein the linear star dendrimer or hyperbranched soft segment forming functional oligomer with degradable arms is formed from polyethylene and L-lactic acid, polyethylene and d,l-lactic acid, or polyethylene and glycolic acid.